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ABSTRACT

This document reports a project to define, identify, and describe new and emerging occupations in Nebraska and disseminate that information to vocational education program and curriculum planners. Chapter 1 describes the background, problem, and purpose of the project. Chapter 2 sets forth the objectives and discusses procedures for developing a statewide definition, identifying potential new and emerging occupations, and obtaining occupational information. Chapter 3 contains the Nebraska definition and copies of brochures prepared for each new or emerging occupation in Nebraska. Each brochure provides this information: overview of occupation, projected demand, typical employers, major duties, present source of skilled workers, wages and hours, list of sources for additional information, brief project description, and complete listing of new and emerging occupations. These occupations are included: automotive diesel technician, automotive electronics technician, alcohol plant technician, bio-medical equipment repair technician, dietetic technician, home health aide, human services worker, industrial hygiene technician, legal assistant, multi-competency health technician, nuclear power technician, podiatric assistant, semi-trailer mechanic, solar energy technician, diagnostic medical sonographer, swine confinement specialist, tumor registrar, vending machine repair, word processing specialist. Chapter 4 summarizes conclusions and recommendations. Activity flow charts, sample questionnaires, and occupational data collection forms are appended. (YLB)

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New & Emerging Occupations Project

Final Report

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CE 027 332

U S DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

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Submitted by
Southeast Community College — Lincoln Campus
Pursuant To A Grant (#131-80-01) From The
Research Coordinating Unit, University of Nebraska

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THE NEW AND EMERGING OCCUPATIONS PROJECT

Abstract

The Vocational Education Amendments of 1968 provided that Federal funds could be used for"projects in the development of new careers and occupations." Most states have experienced a need for information about new and emerging occupations. In response to that need, the Nebraska Department Of Education-Vocational Division issued a request for proposals that addressed new and emerging occupations in Nebraska. Southeast Community College-Lincoln responded to the request for proposals and was subsequently awarded a nine month contract.

The primary purpose of the project was three-fold. First, a definition had to be developed which was agreed upon by people across Nebraska. Second, new and emerging occupations had to be identified and described. Lastly, the accumulated information had to be disseminated to individuals across Nebraska who are involved in program and curriculum planning.

The efforts and results of this project should not be viewed as a program justification effort. More detailed needs assessment activities on a local or regional basis must be conducted in order to justify a program which responds to a "new and emerging" occupation. This project was approached as an aggressive attempt to look at the future and potential occupations that might exist. Significant effort has been spent in looking at future occupations but not for program justification purposes.

A series of three questionnaires were mailed to seventy people who have a working knowledge about Vocational Education. The resulting information was refined into a "State" definition of new and emerging occupations. Through a search of literature and various brainstorming techniques, a pool of potential new and emerging occupations was developed. Each of these occupations was researched by literature, personal contact and telephone interviews. When sufficient information was gathered, a determination was made as to whether or not the description fit the Nebraska new and emerging occupations definition. Descriptive brochures were then written for each new and emerging occupation for later dissemination. At the conclusion of this project, descriptive brochures and final reports will be made available to disseminate all findings.

A large thank you is due to the many people who took time to help those of us involved in the project to define what"new and emerging occupations" means in Nebraska. Thanks are also due to the people who answered our questions about new occupations and others who helped us produce the descriptive brochures on each new and emerging occupation.

I. INTRODUCTION

Background

Whether we are prepared or not, the world of work is changing. New demands are being made on schools and educators to provide well trained individuals to meet new and expanding job opportunities. To prepare individuals for work, we must be sure that training and education programs students receive help them fill the demands of the potential employer.

Generally, change is not difficult to bring about. What educators need to be about is planned change. Before change can be engineered, the pressures for change must be examined. The pressures which are causing drastic change in the work world can be grouped into three categories; advancing technology, socio-political forces and supply / demand of resources.

Our advancing technology creates and eliminates jobs daily. As new machines are created,so are whole new areas of skill applications and manpower allocation. Likewise, existing jobs become non-existant. Technology is causing a change in the work world at an alarming exponential rate. By the time we spot a social trend or problem, some would say that it's almost too late to respond.

Supply and demand of resources have and will continue to play a dominant role in structuring future change in the employment picture. Our population, while no longer growing at a frightening rate, our resources are being depleted by that population. More efficient methods of using resources,recycling resources, or the development of new resources all result in changes in the world of work.

All of the above forces for change have implications for students and training institutions. Students need to develop an accepting attitude toward change-a flexibility. As technology proceeds to eliminate,modify and create jobs, students must have both an attitude toward occupations which is flexible and a knowledge of basic skills which is adaptable. They will also need to remain open to retraining themselves from time to time. Some would say that this retraining should be continuous. Similarly, training institutions must remain flexible, open to change and ready to retool themselves if they are to meet the challenge of a changing work world. Obviously they cannot afford to train students for occupations which will soon be obsolete. Curriculum must be designed and redesigned to meet the rapidly changing demands of employers. This calls for a process to predict changes in the work world and maintain curriculum capable of meeting the needs of the student of the future.

In order to take on these characteristics people and institutions need to actively seek out the trends and possibilities on the horizon. Though such "neck stretching" exercises their ability to cope with changes that later occur is less traumatic and has the potential to be more planned and refined.

Problem

The need for information on changing employment requirements to use in program planning was acknowledged in the 1968 Vocational Amendments which authorized funding for states for use in research and development of new careers and occupations. The amendments also provided for "...assistance to state and local educational agencies in the development of curriculums for new and emerging occupations, and to coordinate improvements in,and dissemination of existing curriculum material."

The problem occurs when local education agencies try to determine just what exactly are new and emerging occupations. There has not been an agreed upon definition for anyone to use. Even if a standard definition were developed, traditional methods for assessing state or regional need are not sufficient.

For example, traditional employer surveys are generally insufficient for identifying new and emerging occupations. Almost by definition new occupational functions are not well defined and employers may find it difficult to agree on specific duties required and whether they represent a distinct occupation. Furthermore, new and emerging occupations are so widely dispersed through a population that traditional state and region-wide survey methods may completely bypass a new occupation.

Data produced by the Department Of Labor are also of limited value. Documents such as the Occupational Outlook Handbook and the Dictionary of Occupational Titles are designed to reflect already existing occupations. Also, these publications are produced with a national focus,frequently overlooking the individual needs of a state.

Much of the difficulty in identifying new and emerging occupations is tied to the way in which they evolve. Generally some new tasks are to an already existing job. As the need grows for the new skills,individuals gradually split into new job categories. As the need for the new skills is recognized and demand grows, more individuals begin to perform the skills on a full time basis.

Purpose

The project has attempted to actively take a look at the future in an effort to predict some of the more likely"new and emerging" occupations in Nebraska. Hopefully the "state definition"and the identified"new and emerging occupations" will provide local and regional vocational program planners with some direction for their search for appropriate curriculum changes. This study was not intended to stand alone as justification for new programs but rather to be a starting point for vocational educators involved in the program planning process.

II. PROCEDURES

Objectives

As the project was originally planned, four sequential objectives were set to help define the scope and sequence of work to be accomplished during the contract period.

The original objectives were:

1) Identify criteria to be used in defining new and emerging occupations; these criteria reflecting a concensus of opinion gathered from literature, educators and employers.

2) Identify new and emerging occupations in Nebraska using established criteria and definition(s);identifying basic job skills required of the occupations; and cross checking those skills with existing occupations.

3) Project current and future need for trained personnel in the identified occupations.

4) Disseminate final results of the project to all area community technical colleges in Nebraska through regional workshops.

As in all project proposals, an initial plan is set out to accomplish certain goals. Not all circumstances or implications can be predicted before activity on a project has even started. There were three major factors which surfaced during the project which altered some of the objectives.

The first unpredicted factor was time. The initial estimate for amount of time involved to determine the criteria for defining new and emerging occupations was accurate. However, the time estimated for identifying potential new and emerging occupations and obtaining accurate information from employers was very inadequate.

The second factor was one of focus. Initially this project was striving to be quite detailed in its needs assessment market projections phase. As the nature of new and emerging occupations became more clear, it became obvious that the task of actual needs assessment must be done within the area to be served by a potential new unit of instruction. The best that could be done by this project was to do some active and careful looking at the future to define some areas of potentials--a beginning for local needs assessment but not nearly specific enough to use as a sole base for the development and implementation of a new project.

The third influencing factor which could not be predicted was a change in project staffing mid-project. The project director left the project for other full time employment. Subsequently another person was hired to do technical researching of potential new and

emerging occupations and the Campus Director, Dr. David Buettner, assumed other project director duties. This had very direct implications in the ability of the project staff to accomplish the fourth objective originally stated in the project proposal.

With the implications of less available time and a change in staff as well as a focus change, the project objectives as achieved could be restated as such:

1) Identify criteria to be used in defining new and emerging occupations;these criteria reflecting a concensus of opinion gathered from literature,educators and employers.

2) Identify new and emerging occupations in Nebraska using established criteria and definition(s); identifying basic job skills required of the occupations; and cross checking those skills with existing occupations as well as obtaining estimates of need for additional trained workers in the next five to ten years.

3) Disseminate final results of the project through mailing of brochures and final reports at the conclusion of the project.

Activities designed to accomplish these objectives were sequential in nature and are best visualized by the flow charts constructed early in the project. (Appendix A) These activities and their sequence were changed and refined in response to advice of an outside advisory group. (Appendix E)

Developing A Statewide Definition

It is impossible to identify new and emerging occupations without having a definition which is at least somewhat universal to a population and is easily understood. Therefore,the first task of this project was to establish a definition for new and emerging occupations. Since this was a project to benefit the entire state of Nebraska, it seemed appropriate to include a cross section of people from Nebraska in defining new and emerging occupations.

When thinking about a definition which evolved from a group, three factors emerged. (1) Establishing a group concensus under the best of conditions is a task which is difficult. It calls for careful identification of all possible options and then at least partial compromise on the part of all people invloved. (2) When a group is "presented"with a finished product, they feel no particular ownership or commitment to that project. (3) Nebraska is a large state with knowledgeable people spread throughout.In view of these and other factors, the Delphi technique were chosen as a good method for obtaining the knowledge and involvement of a large number of people for a minimum expense of dollars and time.

The Delphi technique was initially developed at the Rand Corporation in the early 1950's by Olaf Helmer and Norman Dalke. Later the method was perfected at the Institute For The Future in the late 1960's by Olaf Helmer and Theodore Gordon.

The Delphi method involves a questionnaire mailed to a panel of experts who, after several interchanges, tend to converge toward a group position. This technique has two general uses or purposes, 1) future forecasting and/or 2) refinement of group opinion. The goals of this procedure usually relate to gathering data or information from "experts" or "informed sources." By using expert opinion, the researcher gathers decision alternatives and attempts to build a concensus among the respondents.

The project staff decided to use the Delphi technique to develop Nebraska's definition of new and emerging occupations. A set of three questionnaires was developed and a timetable was established. Recognized and validated questionnaire development techniques were used to design and follow-up on each questionnaire. (Copies of the timeline, follow-up schedule and questionnaires are appended to this report).

A list was developed which contained names of individuals who have decision making powers and influencing powers on vocational education. These individuals were each called and asked to be a part of our definition forming group. A final group of 66 people agreed to participate in the Delphi process.

The questionnaire set was designed to generate and then select and refine a set of criterion statements, which as a group, would become the Nebraska definition of new and emerging occupations. The first of the questionnaires asked each participant to individually generate a list of potential list of criteria. Each questionnaire that was returned contained an average of seven criterion statements. Each returned statement was put on a 3 x 5 card and sorted into related groups. Fifteen general areas emerged:

1. Growth and demand
2. Skilled-requires training
3. Regional or national demand
4. Part of a career ladder
5. Recognition
6. Ethical considerations
7. Environmental concerns
8. Non-criteria
9. Limited training opportunities
10. New within given time span
11. Labor intensive
12. Generalizable skill
13. New skills or knowledge
14. EEOC considerations
15. Program justification statements

The statements which were identified as program justifications and non-criteria were eliminated. The other statements were synthesized into eleven proposed criterion statements which might be included in a definition of new and emerging occupations.

The second questionnaire was composed of the eleven proposed statements. The respondents were asked to indicate for each statement whether they felt it must be considered, should not be considered or must not be considered. Space was also left at the end of the questionnaire for comments. Numerical values were assigned to each category and the statements were ranked and divided into three groups.

The three groups were 1) proposed criteria for a definition, 2) valuable criteria but

not to be included and 3) not to be considered further. These were put on the third questionnaire. Respondents were asked to comment on the groupings and on working of individual criterion statements. From the response to this questionnaire we were able to write the definition for new and emerging occupations.

The writing and refining of the definitions were difficult. When the staff received conflicting input from the questionnaires, subjective judgements had to be made. Our end product had to be simple enough to be useable and yet represent at least the spirit if not the actual words of all of the Delphi participants. Hopefully, the process resulted in a definition which was a workable compromise.

Identifying Potential New And Emerging Occupations

Occupations that were potentially new and emerging were identified through a variety of techniques--a review of literature on new and emerging occupations,identifying recent trends in technology and an informal survey of vocational educators.

The review of literature yielded a number of potential occupations. A primary source was the national study by Meleen, et al. That study considered 100 occupations, eleven of which were defined as new and emerging. Also considered, were areas which have recently been funded for curriculum development activities.

The other major means of identifying potential occupations was through an informal verbal survey of a variety of vocational educators. This yielded some occupations, primarily ones for which training has occasionally been requested but not available.

Obtaining Occupational Information

An information collection sheet was developed (Appendix D) which pulled together information needed 1) to determine whether or not the occupation was new or emerging and 2) to describe the occupation and its potential.

For each potential occupation a list of associations, employers and educational institutions was compiled. The people considered as possibly knowledgeable about each occupation was then contacted by telephone to gather information. As several sources provided occupation begin considered was new and emerging or not. Many phone calls and follow-ups on leads were needed for each occupation. This proved to be a very time consuming activity.

For each occupation which was new or emerging in Nebraska, a brochure was prepared for distribution which provides general occupational information and sources of more detailed information. These brochures will be useful to school guidance counselors, potential students, career planning centers and others interested in new and emerging occupations in Nebraska.

III. FINDINGS

Nebraska Definition - New And Emerging Occupations

In order for an occupation to be identified as new and emerging it must meet the following criteria.

- skilled, requiring definable skills and knowledge, and require some training prior to competent performance.

- skills and knowledge required for performance must be new or consist of new combinations of existing skills and knowledge.

- provides compensation greater than minimum wage or be part of a career ladder which has the potential to provide increased economic return through advancement.

- substantial national and/or regional growth must be forecast for the occupation.

A new & emerging occupation

Automotive Diesel Technician

Overview

The Automotive Diesel Technician inspects, diagnoses, services, and repairs diesel powered automobiles. The occupational specialty is growing out of the increasing frequency of automotive diesel applications. The Diesel Technician is likely to be skilled in general mechanics and other specialties also since it is unlikely that most service facilities will allow an individual to limit the application of their trade to only the power plant of diesel automobiles.

The special knowledge and skills required to perform this occupation include diesel theory, mechanical fuel injection systems, and diesel emission standards and controls. These requirements are over and above the standard mechanical skill and knowledge required of an auto mechanic generalist.

Projected Demand

The increasing demands on manufacturers to achieve high fuel economy in their products has led to the proliferation of diesel powered automobiles. While there is no consensus about the long range future of the diesel engine, there is a great deal of agreement that the diesel engine will provide a major solution to the automotive power plant needs of the next two decades. Fuel economy improvement has been achieved through the use of the diesel in both large and small automobiles. As a result, manufacturers now have under development or in production, diesel engines for a widening variety of vehicles.

The result is the increase in the demand for auto mechanics with a special knowledge and experience in the repair of diesel automobiles. Most service facilities will need to build a diesel service capability during the next five years. An applicant for employment with these skills will be highly sought after by these employers. Similarily, persons with these skills will be valued highly by their employers since competition for them will likely be very keen.

Typical Employers

- automotive dealership service departments
- independent service businesses
- fleet operators
- manufacturers

Major Duties

- diagnose diesel power plants' problems or malfunctions
- service and repair diesel power plants
- diagnose and repair mechanical fuel injection units
- service, repair, or adjust related automotive components

Present Source of Automotive Diesel Technicians

- retraining of existing mechanics
- truck service industry
- schools specializing in diesel technology
- on-the-job training

Wages and Hours

The pay range for Automotive Diesel Technicians will continue to be closely aligned with that of the general automobile mechanic which ranges from $11,000 to $21,000. Profitsharing plans and other incentives can sometimes boost the earnings of the specialist considerably. Self-employment or employment as a manufacturer's representative can also boost earnings substantially.

For More Information Contact:

An Association of Automotive Diesel Technicians

Automotive Service Council, Inc.
Elmhurst, Illinois

Potential Employer of Automotive Diesel Technicians

Misle Imports, Inc.
5020 "O" Street
Lincoln, Nebraska

McDonald Volkswagen/Audi/Subaru
1241 North 48th Street
Lincoln, Nebraska

Randolph Oldsmobile, Inc.
21st and "N" Street
Lincoln, Nebraska

A School Involved in Training Automotive Diesel Technicians

Southeast Community College —
Milford Campus
Milford, Nebraska

About The New and Emerging Occupations Project

Dr. David Buettner
Campus Director
Southeast Community College —
Lincoln Campus
8800 "O" Street
Lincoln, Nebraska 68520
(402) 471-3333

About the Project

The New and Emerging Occupations project is a project funded through the Nebraska Department of Education —Vocational Division to identify new and emerging occupations in Nebraska. New demands are being made on schools and educators to provide well trained individuals to meet new and expanding job opportunities.

Information gathered by this project should serve a three-fold purpose. First, the information provides some directions for educators in longrange planning for developing new programs. The information will also give counselors and career planning centers a better picture of possible job opportunities for students. Lastly, the information gathered by this project will show students and potential students possible occupational/training choices which fit into the job market of the future.

The project is a look into the future. As such, its conclusions are based on educated projections and to some extent, conjecture. Changing circumstances and technology could change the extent to which the occupations cited by the project develop into sizeable job markets. The reader is cautioned that as time progresses, the conclusions of this project should undergo constant re-validation until such time the projected occupational growth is occurring or to the point where the projections appear to be inaccurate.

Other New and Emerging Occupations

Automotive Diesel Technician
Automotive Electronics Technician
Alcohol Plant Technician
Bio-Medical Equipment Repair Technician
Dietetic Technician
Home Health Aide
Human Services Technician
Industrial Hygiene Technician
Legal Assistant
Multi-Competency Health Technician
Nuclear Power Technician
Podiatric Assistant
Semi-Trailer Repair Technician
Solar Energy Technician
Sonographic
Swine Confinement Specialist
Tumor Registrar
Vending Machine Repair
Word Processor

SCC L0465(m)

Automotive Diesel Technician

The New & Emerging Occupations Project

Southeast community college
Lincoln Campus
Nebraska Dept. of Education

A new & emerging occupation

Automotive Electronics Technician

Overview

The Automotive Electronics Technician inspects and deagnoses an automobile with the aid of electronic test equipment with a special emphasis on the automobile's electronic systems and components. The occupational specialty is growing out of the increasing frequency and complexity of electronics used in the automobile and the attendant difficulty of training the general mechanic population in the highly technical aspects of modern electronics. While the tune-up area of automobile servicing has used electronics in its testing and diagnostic equipment for several years, electronics are now used as components of the ignition, emission control, instrumentaion, and now in some cases fuel distribution systems. Where feasible, simple tests and throw-away components are used to lower the technical skill required to service these systems, but with age, use and collision or fire damage, these systems will develop unanticipated malfunctions which will require service by a thoroughly trained technician.

Projected Demand

The increasing demands on manufacturers to achieve cleaner and more efficient automobiles as well as their desire to incorporate the newest electronic technology in continuing efforts to offer the customer greater levels of convenience and service, has resulted in an explosion of sorts in the quantity and sophistication of electronics found on the automobile. While substantial efforts are being made to design the systems and train existing service personnel to facilitate maintenance of these systems, most service shops already place a premium value of any job applicant who can demonstrate a thorcugh competency in servicing and restoring function to such systems. Excellent opportunities will exist for such persons in most all service operations employing three or more people. Opportunities are also very promising for the entrepreneur who would prefer to operate an independent service agency specializing in automotive electronics systems.

Typical Employers

- automotive dealership service departments
- independent service businesses
- fleet operators
- manufacturers

Major Duties

- diagnose systems and components malfunctions
- connect and use sophisticated electronic test equipment
- remove, test and replace automotive electronic components
- calibrate components, systems, or test equipment
- service, replace, or adjust related automotive components

Present Source of Automotive Electronics Technician

- specialized training for existing mechanics

Wages and Hours

The pay range for Automotive Electronics Technicians will continue to be closely aligned with that of the auto mechanic which ranges from $11,000 to $21,000. Profit sharing plans and other incentives can sometimes boost the earnings of the specialist considerably. Self-employment or employment as a manufacturer's representative can also boost earnings potential substantially.

For More Information Contact

A School Involved in Training Automotive Electronics Technicians

Schoolcraft Community College
18600 Haggerty Road
Livonia, Michigan

An Asocition of
Automotive Electronic Technicians

An Association of Automotive Electronics Technicians

Automotive Service Council, Inc.
Elmhurst, Illinois

Potential Employers of Automotive Electronics Technicians

Misle Imports, Inc.
5020 "O" Street
Lincoln, Nebraska

Park Place Pontiac/Cadillac/Mercedes Benz/SAAB
70th & "O" Street
Lincoln, Nebraska

Fish Auto Repair
201 North 19th
Lincoln, Nebraska

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Sonographic
Swine Confinement Specialist
Tumor Registrar
Vending Machine Repair
Word Processor

SCC L0465(e)

Automotive Electronics Technician

The New & Emerging Occupations Project

Southeast
Lincoln Campus
Nebraska Dept. of Education

A new & emerging occupation

Alcohol Plant Technician

Overview

The United States is experiencing an energy shortage. Without question, the United States must find ways to reduce its dependence upon the finite resource of petroleum. To reduce its dependence upon petroleum one obvious answer is to practice conservation, but more than conservation must be done if this country's long term energy needs are to be solved. A partial solution to our energy needs is to develop alternative energy sources. One energy source which is rapidly developing is that of ethanol production and utilization. For many years the economics of ethanol production were not feasible, but with the increased cost of petroleum, ethanol has become economically feasible.

Ethanol production and utilization is particularly attractive to the United States because of the sources it uses. For the most part, ethanol can be derived from agriculture products such as corn, milo, wheat, sugar cane and other related crops.

While the jobs are not completely clear, it would appear that alcohol/ ethanol plants will hire people in the following categories:

1. Plant manager
2. Shift foreman
3. Operators

Major Duties

Plant Manager:

- Supervise employees
- Oversee strict quality controls
- Coordinate timing of plant operations- incoming grains, cooking, fermentation, and distillation
- Supervision of computer
- Compliance with RATE regulations
- Troubleshooting

Shift Foreman:

- Recordkeeping
- Maintain strict quality controls
- Coordinate activities specific to his/ her shift
- Repairs and general maintenance
- Operation of computer
- Troubleshooting

Operators:

- Temperature checks and controls
- Batch quality checks
- Mixing and blending of materials
- Cleaning
- Maintenance
- Recordkeeping
- Grain handling

Projected Demands

During the next two years there will be a significant increase in the demand for ethanol/alcohol technicians. Initially the most demand will probably be related to on-farm production of ethanol/ alcohol. However, as more and more commercial plants are constructed in production a significant demand for technicians in the commercial field will develop. It is likely that in Nebraska alone there will be a demand of 75-100 alcohol/ ethanol technicians during each of the next 2-3 years.

Typical Employers

At the present time the most employment opportunities seem to exist with smaller on-farm or cooperative farm endeavors related to ethanol/alcohol production. As commercial plants become operational in the next 2-3 years these plants should provide a significant source of employment opportunities.

Present Source of Employers

At the present time there is not a consistant source producing alcohol/ ethanol technicians. The Southeast Community College-Milford Campus is in the process of implementing an alternate energy program which will provide students with a comprehensive background of ethanol/alcohol production and utilization. Other community colleges in Nebraska are providing short term courses on ethanol/ alcohol production and are also a source employers might contact when looking for employees in this field.

Wages and Hours

Wages will be similar to those of other comparable occupations. Alcohol/ethanol production in many cases, will take place on the 24 hour basis. Therefore in many operations three shifts will be available to potential employees and production is likely to take place 7 days per week.

For More Information Contact

Agency:

Nebraska Agriculture Industrial
Utilization Committee
National Gasohol Commission, Inc.
Suite 5, 521 So. 14th
Lincoln, Nebraska 68508

Association:

The Bio-Energy Council
1625 "I" Street NW, Suite 825A
Washington, DC 20006

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Alcohol Plant Technician

The New & Emerging Occupations Project

Southeast
Lincoln Campus
Nebraska Dept. of Education

A new & emerging occupation

Bio-Medical Technician

Overview

(From Chronical Guidance Publication)

Bio-medical equipment technicians are members of the health-care team. The need for these workers arose when physicians, scientists and engineers combined their skills to develop complex equipment now used to diagnose, prevent and cure desease and illness. The medical profession uses many electrical and electronic devices, such as pacemakers, electrocardiograph machines, heart-lung machines, kidney dialysis machines, blood pressure monitors, centrifuges, chemical analyzers, radiation meters, spectrophotometers, electrocephalograph machines, diathermy units, patient-monitoring equipment, electronic laboratory equipment, operating room equipment, hypothermia equipment, electrosurgery units, respirators and other bio-medical equipment. Bio-medical equipment technicians keep all these machines in working order.

Typical Employers

- Hospitals
- Bio-medical equipment manufacturers
- Electronic service companies

Major Duties

Bio-medical equipment technicians use schematic diagrams, precision hand tools and sophisticated electronic test equipment to install, inspect, test, maintain, calibrate and repair bio-medical equipment. Technicians work with physicians, nursesm engineers and other hospital personnel to keep life-sustaining equipment operating safely and effectively. Technicians test electronic circuits and components to find faulty circuits or connections and failed parts. They repair loose connections with a soldering iron and use hand tools to replace transistors, integrated circuits, capacitors, transformers, resistors and switches. They disassemble equipment and repair or replace faulty mechanical and electronic parts. They adjust and calibrate styli, oscillographs and other recording devices.

Projected Demand

Because of the increasing use of bio-medical instruments designed to diagnose, treat and monitor patients, and innovations and technological changes in the health-care industry, a need currently exists for well qualified technicians to operate, maintain, calibrate and repair this equipment. The increased demand for skilled personnel is directly related to the increased use of computers, microprocessors and other electronic devices.

Wages and Hours

Bio-medical equipment technicians' salaries vary according to employer, geographical location and ability. Beginning semi-trained technicians with two-year associate degrees earned between $8,000 and $10,00 a year in 1976. Trained and certified technicians or those with four years of ecperience earned between $11,000 and $14,000 a year. Top salaries for these technicians were between $14,000 and $18,000 a year. Most employers offer holiday and vacation pay and provide other fringe benefits, such as life insurance, hospital insurance, medical and surgical insurance, sickness and accident insurance and retirement pensions.

The standard workweek for these technicians is forty hours, five days. They may work longer hours during emergencies. Those working in hospitals may work rotating shifts, which include weekend and holiday work.

Present Sources of Employees

- Electronics technicians with on the job specialized training.
- Schools involved in training bio-medical repair technicians.

For more information contact:

An Employer:

Circulatory Systems R & D
Medtronic, Inc.
3055 Old Highway Eight
Minneapolis, Minnesota 55418

An Association:

Society of Bio-Medical
Equipment Technicians
Association for the Advancement
of Medical Instrumentation
Suite 602
1901 North Fort Myer Drive
Arlington, Virginia 22209

A Good Book:

Questions and Answers About
Medical Electronics
by Howard Soms Co., Inc.
4300 West Sixty-Second Street
Indianapolis, Indianna 46206

About The New and Emerging Occupations Project:

Dr. David L. Buettner
Campus Director
Southeast Community College
Lincoln Campus
8800 "O" Street
Lincoln, Nebraska 68520

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Alcohol Plant Technician
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Dietetic Technician
Home Health Aide
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Legal Assistant
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Sonographic
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Tumor Registrar
Vending Machine Repair
Word Processor

Bio-Medical Technician

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Dietetic Technician

Overview

Dietetic Technicians function under the general supervision of a registered dietetian. They participate in programs providing nutritional care for individuals, families and groups. Basic responsibilities include assisting a dietitian in nutritional assessment planning, implementation and evaluation of nutrition education programs and maintenance of optional nutritional care through institutional and/or community nutrition programs.

Major Duties

The major duties of a dietetic technician will vary depending on the place of employment. However, several job responsibilities generalize to most technicians.

- Design dietary plans for a wide variety of individual needs.
- Take accurate diet history
- Evaluate diet history using the Basic Food Groups
- Instructs individuals on normal nutrition and diet modifications.
- Supervises the preparation of food in quantity and quality.

Projected Demand

Dietetics have been characterized as a profession with a shortage of qualified personnel. The Mid-West region with its large rural population has a definite need for trained dietetic technicians. Urban areas are using the paraprofessionals in hospitals and nursing homes in ever increasing numbers. Opportunities abound in various health care areas for dietetic technicians.

Typical Employers

- Community health agencies
- Clinics and hospitals
- School systems
- Nursing homes
- Day Care centers

Present Source of Dietetic Technicians

There are post-secondary training programs which are avaialbe to people wishing to be trained as dietetic technicians. Often a person who is already employed as a food service worker will seek further training to upgrade their skills level.

Wages and Hours

Most dietetic technicians are employed full time although there is a possibility of part-time work in smaller settings. The beginning salary for a dietetic technician ranges from $8,000 and $10,000 annually. Most health care facilities provide good fringe benefits which add significantly to the total salary.

For more information contact:

An Employer:

Lincoln General Hospital
2300 South 16th Street
Lincoln, Nebraska 68502

A School:

Southeast Community College
Lincoln Campus
8800 "O" Street
Lincoln, Nebraska 68520

A Professional Association:

American Dietetians Association
430 North Michigan Avenue
Chicago, Illinois 60611

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SCC L0465(r)

Dietetic Technician

The New & Emerging Occupations Project

Southeast community college

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Nebraska Dept. of Education

A new & emerging occupation

Home Health Aide

Overview

A home health aide provides domestic services for the disabled and/or elderly. Some special skills in patient handling, medication and nutrition are often required and are usually helpful in providing competent services. The growing emphasis on alternatives to nursing home care for the disabled and elderly is resulting in a need for people capable of taking services normally provided in nursing homes to the home. As a result, service providers need to be perceptive and independent, taking appropriate actions on their own under the direct supervision or support of other care staff. This special combination of skills and knowledge creates the home health aide occupation.

Major Duties

- check vital signs
- irrigate catheters
- administer exercises
- give baths
- give instructions in self care
- observe health related conditions and refer when appropriate to proper action groups or individuals.

Projected Demand

Because of the growth in the number of older persons and the agressive development of the alternatives to nursing home care, the need for home health aides is expected to grow considerably. Depending on the success of efforts to promote alternatives to nursing home care, this demand will likely exist for considerable years into the future.

Typical Employers

- Community Health Agencies
- Local Governments
- Private firms specializing in providing Home Health Services
- Self-employment

Present Sources of Home Health Aides

- nursing school non-completers
- health technicians seeking part-time employment
- walk-in applicants without special training
- on-the-job training efforts of employers
- family of disabled/elderly persons

Wages and Hours

The pay range for home health aides in sub-minimum to approximately $4.20/hr. Most aides earn $3.50 to $4.00/hr. Hours are flexible with special opportunities for part-time employment and self determined schedules. Advancement is especially good for the entrepreuer aide wishing to operate a service company.

For more information contact:

A school involved in training home health aids:

Hawkeye Institute of Technology
Waterloos, Iowa, 50704

An employer of home health aides:

Ms. Cindy Okerle
Up John Health Care Services
1701 S. 17th, Suite 16
Lincoln, Nebraska
475-3232

Ms. Carolyn Schmaker
Home Health Care
4730 Randolph
Lincoln, Nebraska

An association of Home Health Aides:

National Council for Homemaker/
Home Health Aide Services
67 Jruing Place
New York, New York 10003
(212) 674-4990

A government Agency:

Nancy Brown
State Health Department
301 Centennial Mall South
Lincoln, Nebraska

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Southeast Community College
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HOME HEALTH AIDE

The New & Emerging Occupations Project

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A new & emerging occupation

Human Services Worker

Overview

A Human Services Worker is prepared to help people who have problems in living. There are two major aspects in this area:

Educational Component

Working with persons to educate them or prepare them to better cope with some aspect of their lives.

Clinical Component

Working with clients as individuals to help them in trouble, in crisis, or in disability to resolve or better cope with their problems.

The Human Services Worker has developed as a range of middle level paraprofessional worker in the mental health delivery system as the employers of mental health programs have changed from largely institutionally-based psychiatric treatment programs for the mentally ill to a range of community based programs treating a wide spectrum of emotional disorders in addition to mental illness.

Major Duties

- conducting intake interviews
- gathering information on client life situations
- recording history and background information on clients
- making recommendation for treatment, discharge, follow-up
- working with families of clients
- doing group counseling
- motivating clients to improve
- maintaining client records
- participating on team/staff meetings
- scheduling appointments for follow-up
- making referrals to other agencies
- serving as spokesperson for client in relation to other staff

Projected Demand

Recent trends indicate there is a trend to provide services to clients (or patients) in the communities where clients live. This is true of corrections, youth services, mental health, and mental retardation.

Another trend is to nomalize the living conditions in as independent living situations as possible.

Increasingly, clients are turning to self-help groups.

Nearly all the human service areas have begun to employ new levels of workers in addition to the paraprofessionals.

As clients are integrated into the community, greater support services will be required in these settings.

Typical Employers

Positions for Human Services Workers are as:

- outreach workers
- aftercare workers
- corrections workers
- mental health workers
- aging program workers
- human services workers
- youth services workers

Present Sources of Human Services Workers

- on-the-job training efforts
- walk-in applicants without training
- professionals unable to obtain jobs in professional areas
- advancement within agencies
- dropouts from professional schools

Wages and Hours

The pay range for Human Services Workers depends on the area in which the worker seeks employment but ranges from minimum wage $3.50 per hour to $12,000 annually. Hours are variable.

For More Information Contact:

A School Involved in Training Human Services Workers

Southeast Community College —
Lincoln Campus
8800 "O" Street
Lincoln, Nebraska 68520

An Association of Human Services Workers

Southern Regional Education Board
130 Sixth Street, N.W.
Atlanta, Georgia 30313

Government Agency

Beatrice State Developmental Center
Box 808
Lincoln, Nebraska 68310

Potential Employer of Human Services Workers

Freeway Station
2201 South 11th
Lincoln, Nebraska 68502

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Human Services Worker

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A new & emerging occupation

Industrial Hygiene Technician

Overview

The Industrial Hygiene Technician assists the professional industrial hygienist in recognizing, evaluating and controlling workplace environmental factors that may affect the health, comfort or efficiency of the workers. The nature of the environmental factors that need to be controlled might be chemical, physical or biological, and will vary with the nature of the particular industry involved. In smaller companies, the job duties of an industrial hygiene technician frequently inlcude those usually performed by a safey technician.

The technician studies work procedures, materials, machinery, products, by-products and the general environment to identify potential hazards to worker and community health. When hazards have been identified and control measures initiated, the technician monitors the effectiveness of these controls on a continuing basis. For example, the technician migh obtain and analyze air samples on a regular basis to assure that air quality is being maintained within prescribed standards. Other situations might require continuous monitoring of noise level, heat, radiation or fungi. The job duties can be as varied as the potential health and safety hazards that exist within the total work environment.

Projected Demand

Industrial hygiene is a relatively new discipline that came into prominence with the Occupational Safety and Health Act of 1970. Initially, most of the demand was for professional industrial hygienists, analytical chemists, engineers and physicians, since it was necessary to identify hazards and establish standard procedures for monitoring and controlling these hazards. Now that these standard procedures are becoming established, the demand for technicians to apply them is increasing. Larger industrial corporations are likely to employ the greatest number of technicians, by the nature of the industrial processes will also be an important factor. Technicians with cross-training in industrial hygiene and industrial safety will probably have greater employment opportunities in smaller companies.

Present Source of Industrial Hygiene Technicians

- on-the-job training
- some training programs, mostly on the east and west coasts.

Major Duties

- operation and calibration of monitoring and sampling equipment
- analysis of samples
- record keeping
- identifying workplace hazards and recommending controls
- training employees concerning occupational hazards.

Typical Employers of Industrial Hygiene Technicians

- industrial plants
- governmental agencies responsible for enforcing health and safely regulations
- insurance companies

For More Information Contact:

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Industrial Hygiene Technician

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A new & emerging occupation

Legal Assistant

Overview

The Legal Assistant concept began to develop several years ago when many lawyers began to take a good look at productivity and how it could be increased by the addition of trained technicians to perform routine functions. The concept developed in response to the growning volume of work as well as the possible reduction in legal fees to the public.

The Legal Assistant may perform any task delegated and supervised by a lawyer as long as the lawyer is responsible to the client, and assumes full professional responsibility for the product. The only restriction is that a Legal Assistant cannot accept a case, set a fee, give legal advice or appear in court.

Major Duties & Responsibilities

- prepares and reviews legal documents for review by lawyers
- selects, compiles and interprets technical information and legal documents
- prepares detailed office procedures for efficient handling of specialized areas of the law
- applies knowledge of the law

Projected Demand:

The national growth in the legal field and the increasing need for technical skills points to a growing demand for Legal Assistants. Also, experts in the field predict that Legal Assistants will be in great demand in the next few years when the full impact of prepaid legal services is felt throughout the country.

Present Source of Legal Assistants

Presently in Nebraska Legal Assistants are primarily trained on the job with supplementary course work which can be obtained at several post-secondary institutions. Continuing education is particularly important in this profession, where laws and procedures constantly change.

Potential Employers

- Attorneys
- Courts
- Corporations
- Trust departments of banks

Wages and Hours

Legal Assistants are generally employed full time, but part time assignments might be available in some areas. Salary in Nebraska ranges from $850 - $1,000 per month.

For More Information Contact:

Associations of Legal Assistants

Lorine Mares, CLA
Nebraska Association of Legal Assistants
1000 NBC Center
Lincoln, Nebraska 68508

National Association of Legal Assistants
3005 East Shelby Drive, Suite 120
Tulsa, Okalahome 74105

Schools Involved in Training Legal Assistants

Lincoln School of Commerce
1821 "K" Street
Lincoln, Nebraska 68508

Metropolitan Technical
Community College
30th & Fort Streets
Omaha, Nebraska 68111

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Legal Assistant

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A new & emerging occupation

Multi-Competency Technician

Overview

A Multi-Competency Technician is a member of a health care team who uses selected skills and knowledge from two or more traditional health occupations and professions. These could include medical laboratory skills, respiratory therapy, x-ray, or electrocardiography.

Special skills in laboratory procedures, patient handling and use of specialized instruments and machines is necessary to perform with competency.

Because of the inability of the single-skilled technician to meet the needs of small, rural hospitals, neighborhood clinics and private practice settings, the multi-competency approach has great potential for growth.

Major Duties

- prepare patients for treatment
- take x-rays
- take electrocardiograms
- operate respiratory therapy equipment
- perform lab work
- analyze and record lab results

Projected Demands

The increasing demand for licensure in the allied health skills areas will require hospitals large and small to employ people with additional training. The pressure of cost containment in the health field will require smaller hospitals to look to multi-competency personnel whenever there is insufficient workload to allow the employment of trained specialists in each of these areas. In smaller hospitals, there is almost certain need for people who are licensed to perform more than one function. The demand for multi-competency personnel is likely to be substantial, with a greater demand existing in rural areas.

Wages & Hours

Most technicians work a 40 hour week. Working conditions in most cases will be above average. Wages are variable, depending on the area of the country and the type of facility. An average scale range would be from $625 as a starting monthly salary up to $1,400 per month.

Present Source of Employees

- on-the-job trainees
- graduates of multi-competency technician programs
- Navy-trained personnel

Typical Employers

- small rural hospitals
- neighborhood clinics
- private practice

For More Information Contact:

Medical Institute of Minnesota
2309 Nicollet Avenue
Minneapolis, Minnesota 66505

Potential Employers of Multi-Competency Technicians

Thayer County Memorial Hospital
120 Park Avenue
Hebron, Nebraska 68370

Check your telephone directory for local hospitals and health clinics.

Agency

Amercian Medical Association
Department of Allied Health Evaluation
535 North Dearborn Street
Chicago, Illinois 60610

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Multi-Competency Technician

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A new & emerging occupation

Nuclear Power Technician

Overview

At the end of 1978, there were approximately 230 nuclear fueled electric generating plants in the world, 72 of these were in the United States. Requirements for a nuclear work force and job training are running high. The growing demand for nuclear technicians in each of the specialized areas is a result of the emergence of nuclear power as an interim source of energy as world petroleum supplies dwindle and as the nation develops and more fully utilizes coal reserves, solar energy and wind energy. It should be noted that most of the new technologies relating to energy do not represent new technologies in the strictest sense, but they highlight a new and considerable expanded field of technical application.

Projected Demand

As the search for different energy sources expands to serve our growing population there will be an increasing demand for trained technicians in the nuclear energy field.

Major Duties

There are five technician occupations which seem specific to nuclear power. They are:

- radiation protection technician
- instrumentation & control technician
- nuclear materials processing technician
- quality control technician
- nuclear instrumentation & control technician

Because of the potential hazards in nuclear power production and the comprehensive and detailed governmental controls of nuclear energy plants and processes, these technician occupations are very specific and highly sophisticated, requiring workers with highly specialized preparation. The nuclear materials processing technician and the radiation protection technician require an understanding of nuclear physics, radiation protection and a number of other related subjects which lend themselves to formal post-secondary education. In addition, all must have a thorough understanding of the materials, physical layout, processes, machinery and interrelationships of each element of the plant in which they will work. These technicians also need some understanding of nuclear physics and radiation detection and control.

Typical Employers

Employers are generally public and private power companies. Also private industry and government research centers will be seeking trained nuclear technicians.

Present Source of Employees

Currently most employees in Nebraska have some technical college trai then receive on the job training at the plant site.

Wages and Hours

There are full time jobs, both day and night work. Beginning wages in Nebraska range from about $1,000 to $1,800 per month depending on training and experience.

For more information contact:

An Employer:

R.L. Walgren
Nebraska Public Power
Box 499
Columbus, Nebraska 68601

A School:

Edgar A. Kovner
New Dominion College
Norfolk, Virginia 23508

Research Institute:

Center for Occupational
Research and Development
P.O. Box 4395
Waco, Texas 76705

A Government Agency:

Manpower Assessment Office
Office of University Programs
United States Research and
Development Administration
Washington, D.C. 20545

About the New & Emerging Project:

Dr. David L. Buettner
Southeast Community College
Lincoln Campus
8800 "O" Street
Lincoln, Nebraska 68520

About the Project

The New and Emerging Occupations project is a project funded through the Nebraska Department of Education — Vocational Division to identify new and emerging occupations in Nebraska. New demands are being made on schools and educators to provide well trained individuals to meet new and expanding job opportunities.

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Other New and Emerging Occupations

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Human Services Technician
Industrial Hygiene Technician
Legal Assistant
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Nuclear Power Technician
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Semi-Trailer Repair Technician
Solar Energy Technician
Sonographic
Swine Confinement Specialist
Tumor Registrar
Vending Machine Repair
Word Processor

SCC L0465(q)

Nuclear Power Technician

The New & Emerging Occupations Project

Southeast Community College
Lincoln Campus
Nebraska Dept. of Education

A new & emerging occupation

Podiatric Assistant

Overview

A Podiatric Assistant helps a Podiatrist by providing many of the routine services to podiatric patients. A Podiatrist diagnoses and treats diseases and ailments of the feet. As medical services continue to specialize, support staff to provide routine patient care will also be in increasing demand. The Podiatric Assistant can focus in two general directions. Depending on the size and scope of the Podiatrist's practice, a Podiatric Assistant will either be expected to combine patient care and office management skills or specialize in one or the other.

The office function of a Podiatric Assistant would include receptionist and record keeping skills along with human relations skills to help patients feel more at ease and to answer questions. Patient care which might involve the Podiatric Assistant would include assisting in minor surgery, preparing patients for treatment and applying dressings and wraps. A person who is able to combine both functions, office and patient care, will be more employable.

Major Duties

- Record keeping and patient reception
- Checking vital signs
- Apply dressing and wraps
- Assist in minor surgery

Projected Demand

The demand for Podiatric Assistants is directly tied to the number of Podiatrists. Specialized medical care is increasing as is the trend for physicians to be more dependent on support personnel to provide routine medical service. This allows the physician to provide for a larger number of patients.

Typical Employers

- Podiatrists
- Podiatric clinics

Present Sources of Podiatric Assistants

- on-the-job training
- former nurses aides

Wages and Hours

The Podiatric Assistant can be either full time or part time depending on the office size and patient load of the Podiatrist. Wages are similar to those paid medical assistants, minimum wage to approximately $5.00 per hour.

For More Information Contact:

American Society of
Pidiatric Assistants
2204 West Washington Avenue
Waco, Texas 76701

Potential Employers of Podiatric Assistants

Check your telephone book for local listings of Podiatrists.

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SCC L0465(g)

Podiatric Assistant

The New & Emerging Occupations Project

Southeast Community College
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A new & emerging occupation

Semi-Trailer Mechanic

Overview

A Semi-Trailer Mechanic, later referred to as mechanics, has a growing work force in the United States due to the needs of moving freight, livestock, grain and food products.

There is a demand for entry level mechanics in eastern Nebraska with skills acceptable to industry because new types and design are being incorporated into new units being manufactured.

Some of these skills would be working with light weight metals, fiber glass, new safety devices on equipment, welding, material layout, air and electric systems.

There will be a constant demand for these people even if a good rail system is utilized because these units are abused when they are hauled on rail cars.

Tractor trailers are at this time the fastest and cheapest mode of moving material in the United States.

Major Duties

- all mechanical repairs such as brakes, valves, springs, etc.
- metal repair and replacement
- electrical wiring and troubleshooting
- replace insulation
- replace piping system
- replace floors and internal wood

Projected Demand

Industry spokespersons tell us there is no source in our region for trained mechanics despite the great need. The numbers of trucks on the road have doubled every ten years since the mid 1940's and the railroads are increasing their piggy-back business each year. Increasing technology will play an important role in this occupation in the future. Wage levels in terms of real dollars are expected to increase as both demands and technology increase.

Typical Employers

- railroad companies
- small repair industries
- motor freight terminals
- trailer companies such as Fruehauf, Trailmobile, etc.
- self-employment

Present Source of Employees

- on-the-job training
- employees from other companies

Wages and Hours

Starting salary approximately $5.75 per hour or one half journeyman salary depending on the area. Day or evening shift may be available although most firms operate only during the daytime.

For More Information Contact:

A School Involved in Training Semi-Trailer Mechanics

916 Area Vocational School
White Bear Lake, Minn. 55110

Paul Mahoffie
Fruehauf Division
4550 S. 96th
Omaha, Nebraska 68127

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SCC L0465(I)

Semi-Trailer Mechanic

The New & Emerging Occupations Project

Southeast community college
Lincoln Campus
Nebraska Dept. of Education

A new & emerging occupation

Solar Energy Technician

Overview

The Solar Energy Technician performs functions which can be divided into four categories: sales, design, installation and maintenance. This occupation has developed as an outgrowth for our search for alternate energy sources. As the supplies of petroleum and natural gas diminish, solar energy becomes more practical and relatively economical. Since this is a new field with limited employment opportunities, individuals who are generalists have a greater chance at succeeding.

The person involved in sales of solar systems needs a knowledge of different systems, how they operate and are maintained as well as how to integrate solar with existing systems. Individuals with a design focus must be able to generate design and installation specifications and also communicate with architects, engineers and installers, using solar energy systems. Solar Technicians involved in the installation of systems should be skilled in building construction skills and be able to integrate the solar system with existing systems. Service and maintenance functions overlap with skills required for proper installation.

Many individuals working as Solar Technicians are employed by firms who also provide conventional heating and cooling systems. A person working for this type of employer would also need to be versed in the traditional heating/air conditioning skills such as sheet metal fabrication and pipefitting.

Major Duties

- Analyze site for proper system
- Sales
- Technical writing and drawing
- Communication with architects, engineers and traditional heating and cooling specialists
- Basic construction tasks
- Installation and maintenance of solar systems

Projected Demand

This occupation is directly tied to the new building construction market. Currently this is a very slow period for new construction so the demand for expertise in the area of solar technology is low. Solar technicians who can also demonstrate competency in traditional heating and cooling areas will be most employable. The market for specialists in solar technology will grow rapidly in the next five to ten years as petroleum and natural gas continue to rise in cost and people search for less expensive energy alternatives.

Typical Employers

- Heating and air conditioning dealerships
- Independent heating and air conditioning installers and repairers
- Solar sales dealerships
- Self-employment

Present Source of Solar Technicians

- on-the-job training
- manufacturer workshop training for existing heating/air conditioning technicians
- some out of state training available in alternative energy sources

Wages

Wages are closely aligned with those paid in traditional heating and cooling occupations which may range from $7.00 to $10.00 per hour. Profit-sharing or sales commissions may raise this salary. Self-employed technicians' salaries will vary depending on areas of specialty and location.

For More Information Contact:

Agencies

Nebraska State Energy Office
Nebraska State Capital
Lincoln, Nebraska 68509

Nebraska State Solar Office
W 191 Nebraska Hall
University of Nebraska - Lincoln
Lincoln, Nebraska 68588

A School Involved in Training Solar Energy Technicians

Community College of Denver
at Red Rocks
12600 West Sixth Avenue
Golden, Colorado 80401

Potential Employers of Solar Energy Technicians

Artic Air Conditioning
3901 Touzalin
Lincoln, Nebraska 68507

The Energy Shop
14645 Industrial Road
Omaha, Nebraska 68144

Bryant Heating & Air Conditioning
6317 Havelock
Lincoln, Nebraska 68507

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SCC L0465(h)

Solar Energy Technician

The New & Emerging Occupations Project

Southeast Community College

Lincoln Campus

Nebraska Dept. of Education

A new & emerging occupation

Diagnostic Medical Sonographer

Overview

A sonographer is an individual who assists the radiologist with altrasound scans — seeing within the body with high-frequency sound waves.

Diagnostic ultrasound is a team effort. Physicians and technologists work together in order to provide and correctly interpret data.

Ultrasound detects brain tumors, head injuries, gallstones, birth defects, kidney and liver cysts and abcesses, eye problems and much more.

Major Duties

Include, but are not limited to:

- preparing patients for examinations
- correlating clinical history, examination and diganostic test with ultrasound study
- recognizing and interpreting diagnostic scan
- labels, coats and mounts permanent recordings of scans
- assist in research, developing, and formulating new techniques and procedures
- consulting with supervising physician regarding appropriate ultrasonic procedures
- maintain logs to document diagnosis

Projected Demand

The use of ultrasound as a diagnostic tool is growing rapidly, some say explosivly, helping to save lives, discomfort, time and money.

Within 5 years ultrasound will replace many diagnostic procedures: it is fast, accurate, and noninvasive.

Typical Employers

- community health centers
- clinics
- local governments

Projected Sources of Sonographers

- allied health workers from nuclear medicine
- allied health individuals from radiology
- cardiopulmonary technologists and
- cardiopulmonary technologists and cardia catheterization technologists
- individuals — two years of undergraduate work

Wages and Hours

The pay range varies with education and experience from $5.83 per hour to $8.37 per hour. Hours are variable.

For More Information Contact:

A School Involved in Training Sonographers

Southeast Community College —
Lincoln Campus
8800 "O" Street
Lincoln, Nebraska 68520

An Association of Sonographers

American Society of Ultrasound
Technical Specialists

Potential Employer of Sonographers

Bryan Memorial Hospital
4848 Sumner
Lincoln, Nebraska 68506

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SCC L0465(o)

Diagnostic Medical Sonographer

The New & Emerging Occupations Project

Southeast community college
Lincoln Campus
Nebraska Dept. of Education

A new & emerging occupation

Swine Confinement Specialist

Overview

The Swine Confinement Specialist is involved in the daily operations and planning of a swine confinement operation. This occupation may grow rapidly due to the sophistication of livestock feeding in agricultural communities. The duties cover a wide range but can be generally divided into two main categories, administrative and operational. Administrative tasks of a person employed as a Swine Confinement Specialist would include accurate record keeping, scheduling, selection of breeding stock and purchasing equipment and supplies. In many cases, there is also an opportunity for a person employed in this field to have responsibilities for marketing stock produced by the swine confinement operation.

The operational duties of this job might include such tasks as vaccinating, castrating and clipping needle teeth of young pigs. The Swine Confinement Specialist is also involved in operation of the confinement facility. Operation of a heating/cooling/ventilation system is essential as are daily sanitation procedures.

This occupation presents a wide variety of job responsibilities with potential opportunity to focus in technical or management areas.

Projected Demand

Nebraska is one of the leaders in swine confinement complexes. People with the versatility to handle a wide range of job tasks and who are successful in work with livestock will be in demand in this occupation. Our need for efficiently produced food will increase, not decrease in this country and the need for individuals involved in that production will also increase. At the present time, many swine confinement facilities in Nebraska are not large and employ one or two Swine Confinement Specialist. Larger operations can employ up to 50 trained individuals. Opportunities are also good for individuals who would like to develop their own swine confinement operation provided they have access to the necessary financial resources. Even with market fluctuation, the overall growth trend for swine breeding and feeding should continue upward.

Present Source of Swine Confinement Specialists

- On-the-job training
- Animal science/training programs in Nebraska
- Some training programs outside of Nebraska

Major Duties

- Record keeping
- Selection and purchasing of livestock, equipment, feed and supplies
- Maintain sophisticated facility including careful sanitation
- Daily care of swine including vaccinations, castrations and tooth clipping
- Caring for newborn swine
- Possible marketing duties

Wages and Hours

The pay range will be somewhat linked to the livestock market but in general it presently ranges from $900 to $1,300 per month. This could be increased profit sharing plans offered by some employers. Self-employment has a potential for much higher income but the specialist would be more vulnerable to dips and slumps in the market.

Typical Employers

- Owners of family managed swine confinement operations
- Corporation livestock producers

For More Information Contact

A School Involved in Training Swine Confinement Specialists

Ellsworth Community College
Iowa Falls, Iowa

An Association of Swine Confinement Specialists

Nebraska Pork Producers
244 Marvel Baker Hall
University of Nebraska - Lincoln
Lincoln, Nebraska

Potential Employers of Swine Confinement Specialists

Sand Livestock Systems, Inc.
1418 25th Street
Columbus, Nebraska 68601

Uni-Corp., Inc.
Decatur, Nebraska 68020

Burt County Swine
Oakland, Nebraska 68045

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L0465

Swine Confinement Specialist

The New & Emerging Occupations Project

Southeast community college
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A new & emerging occupation

Tumor Registrar

Overview

A tumor registrar is responsible for keeping specialized medical records for cases involving cancer. Tumor registrars are employed by hospitals as well as cancer research facilities.

Special knowledge of medical terms, disease classification and medical office procedures is helpful in providing competent services.

Research into cancer, its causes and cures is continuing at an accelerated pace. As each state, and in turn the nation, networks and combines resources, statistical information, such as that provided by a Tumor Registrar, will be of considerable importance.

As a result, the occupation of Tumor Registrar should be one of considerable growth in the coming years.

Major Duties

- code symptoms, diseases, operations
- transcribe medical reports
- organize statistical information
- prepare research reports

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Projected Demand

Preliminary information states that cancer registration will become mandatory in the near future. Even now, health agencies initiating tumor registry service voluntarily is growing. As this research service expands, cancer registrars will become an intricate member of the health care team.

Typical Employers

- hospitals
- research centers
- state, federal health agencies

Present Sources of Employees

- medical record technicians with additional training
- on-the-job trainees

Wages and Hours

Almost without exception, Tumor Registrars work a regular 40 hour week. Working conditions in most cases are excellent. Wages are usually well above minimum scale, ranging from $9,000 - $11,000 annually.

An Association of Tumor Registrars

American Medical Record Association
Education & Registration Committee
875 North Michigan Avenue, Suite 1850
Chicago, Illinois 60611

A Regulatory Agency

American Medical Association
Committee on Allied Health
Education & Accreditation
535 North Dearborn Street
Chicago, Illinois 60610

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For More Information Contact:

A School Involved in Training Tumor Registrars

Hutchinson Community Junior College
Diana Callen, R.R.A.
Hutchinson, Kansas, 67501

An Association of Tumor Registrars

American Medical Record Association
Education & Registration Committee
875 North Michigan Avenue, Suite 1850
Chicago, Illinois 60611

A Regulartory Agency

Amercian Medical Association
Committee on Allied Health
Education & Accreditation
535 North Dearborn Street
Chicago, Illinois 60610

Potential Employers of Tumor Registrars

Marsha Bruening, R.R.A.
Lincoln General Hospital
2300 South 16th
Lincoln, Nebraska 68502

Mary Haws, A.R.T.
Kearney County Community Hospital
727 East 1st Street
Minden, Nebraska 68959

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Tumor Registrar

The New & Emerging Occupations Project

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A new & emerging occupation

Vending Machine Repair

Overview:

Sales of products to consumers are increasing rapidly. One way retailers are meeting this expanding market is by providing vending machine sales which are less expensive and more convenient than personal service sales. The increased number of vending machines and increased sophistication of those machines requires a larger number of repair technicians versed in a wide range of skills.

Repair of modern vending equipment requires knowledge of mechanical works as well as electrical circuitry and refrigeration. Repair technicians have opportunities to work as part of vending service companies or to be self employed. Also, manufacturers of vending equipment are a source of employment. For the experienced individual with sufficient capital, self-employment is a good option.

Major Duties & Responsibilities

- basic mechanical and electrical repair
- body work on damaged or vandalized machines
- repair of locks and latches
- preventative maintenance
- refrigeration system maintenance and repair

Projected Demand

The national trend toward mechanized sales points toward greater need for maintenance and repair personnel. Nebraska employers indicate a growing need for experienced or "willing to learn" vending repair technicians. Vending companies are hiring from 1 to 15 repair people at the present time.

Potential Employers:

- owners or operators of vending machines
- vending repair companies
- manufacturers of vending equipment
- self employment

Present Source of Vending Machine Repair Technicians

- on the job training
- factory sponsored seminars

Wages and Hours

In most cases this occupation provides full time employment. Wages start at approximately $5.00 per hour and with experience can range as high as $18.00 per hour.

For More Information Contact

Kent Janeck
Kwik-Kafe
3200 South 60th
Omaha, NE

John Rash
CHC Vending
513 South Main
Council Bluffs, IA

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Vending Machine Repair

The New & Emerging Occupations Project

Southeast community college
Lincoln Campus
Nebraska Dept. of Education

A new & emerging occupation

Word Processing Specialist

Overview

Broadly, word processing is the automation of document production. More specifically, it is the combination of trained people, systematic procedures, and automated equipment used to transform ideas into words — typically printed communication.

Consequently, a word processing specialist must be skilled in three broad areas: language arts, equipment operation, and specialized office procedures.

1. **Language Arts** — Because written communication is the chief means of output, word processing specialists must be adept in the use of the English language, grammar, punctuation, spelling and proofreading skills.

2. **Equipment Operation** — The equipment a word processing specialist may be required to operate varies a great deal from office to office. The operator must, of course, be familiar with dictation equipment and be able to transcribe material rapidly and accurately from machine dictation.

Because of rapidly advancing technology, the basic keyboarding equipment of a WP specialist may be required to use varies a great deal as far as sophistication or capabilities are concerned. Text-editing typewriters, such as the memory and mag card typewriters, as well as display standalones with both word and data processing capabilities, are found in local offices. Some offices have begun integrating these information processors with computers.

3. **Specialized Office Procedures** —Because WP specialists do not share the traditional secretary's one-to-one relationship with an employer, standardized operating procedures which suit the specialized production aspect of the position must be learned. Organization of work, records control, and production management are areas specialists must understand.

Major Duties

- Transcribes from dictation equipment,
- Transcribes from dictaion equipment, handwritten material, or printed matter.
- Uses text-editing equipment to prepare correspondence, reports, tables and other specialized materials.
- May use information processors to maintain files and perform other record keeping activities.
- Assists in receiving, logging, filing, distributing and otherwise controlling material processed by the word processing center or may control these activities from a work station.

By definition, word processing specialists are support office personnel as contrasted to management personnel. However, because word processing is a rapidly growing field, career paths and advancement possibilities are very good.

Projected Demand

During the past ten years, word processing has been a rapidly growing industry and projections for the 80's are equally bright.

Since the relative production costs of eletronic and magnetic media have decreased and ease of operation has increased during this same ten-year period, more and more organizations are choosing to install word processing equipment.

Demand varies significantly from location to location. Most local word processing centers are small, employing from three to ten employees. However, many companies are acquiring an information processor or text-editor without organizing a word processing center as such. These companies assign an operator or operators to complete tasks coming from several specialized areas according to the needs of the company.

As a result of specialized needs, requests for word processing specialists may be submitted as requests for a word processing secretary, a word processing operator, a word processor, a mag card operator, a word processing trainee, a text editor operator, a System 6 operator, or other descriptive terms according to the brand name of the equipment owned by a particular company or organization.

Typical Employers

1. **Word Processing Centers** — Banks, insurance companies, law firms, governmental units, and hospitals are typical entities maintaining word processing centers. However, any business with a great deal of correspondence, report production, or record keeping may utilize a word processing center.

2. **Decentralized Work Groups** — Any office requiring office support personnel (secretarial/ clerical services) is a potential candidate for a word processing specialist. If management chooses to purchase automated text-editing equipment and decides to limit its use to only a few principals, it will need the services of a word processing specialist.

Present Sources of Word Processing Specialists

- On the job training
- Specialized training by vendors of word processing equipment.
- Community colleges

Wages and Hours

The pay range for word processing specialist will continue to be closely related to the salaries paid secretarial/ clerical support help. A beginning word processing specialist may receive a salary roughly 20 percent above the entry level salary for clerical workers without specialized training. According to a survey conducted by the International Word Processing Association, effective in April, 1980, the weekly range for entry level word processing personnel ranged from $137 to $262 in the Omaha/Lincoln area.

For More Information Contact:

A School Involved In Training Word Processing Specialists

Southeast Community College
8800 "O" Street
Lincoln, Nebraska 68520

Associations of Word Processing Specialists

International Word Processing Association
Southeast Nebraska Chapter
c/o Sherri Toohey, President
Nelson & Harding
Suite 500, 1200 N Street
Lincoln, Nebraska 68505

International Word Processing Association
Maryland Road
Willow Grove, PA 19090

About The New and Emerging Occupations Project

Dr. David Buettner
Campus Director
Southeast Community College —
Lincoln Campus
8800 "O" Street
Lincoln, Nebraska 68520
(402) 471-3333

About the Project

The New and Emerging Occupations project is a project funded through the Nebraska Department of Education —Vocational Division to identify new and emerging occupations in Nebraska. New demands are being made on schools and educators to provide well trained individuals to meet new and expanding job opportunities.

Information gathered by this project should serve a three-fold purpose. First, the information provides some directions for educators in longrange planning for developing new programs. The information will also give counselors and career planning centers a better picture of possible job opportunities for students. Lastly, the information gathered by this project will show students and potential students possible occupational/training choices which fit into the job market of the future.

The project is a look into the future. As such, its conclusions are based on educated projections and to some extent, conjecture. Changing circumstances and technology could change the extent to which the occupations cited by the project develop into sizeable job markets. The reader is cautioned that as time progresses, the conclusions of this project should undergo constant re-validation until such time the projected occupational growth is occurring or to the point where the projections appear to be inaccurate.

Other New and Emerging Occupations

Automotive Diesel Technician
Automotive Electronics Technician
Alcohol Plant Technician
Bio-Medical Equipment Repair Technician
Dietetic Technician
Home Health Aide
Human Services Technician
Industrial Hygiene Technician
Legal Assistant
Multi-Competency Health Technician
Nuclear Power Technician
Podiatric Assistant
Semi-Trailer Repair Technician
Solar Energy Technician
Sonographic
Swine Confinement Specialist
Tumor Registrar
Vending Machine Repair
Word Processor

SCC L0465(d)

Word Processing Specialist

The New & Emerging Occupations Project

Southeast
Lincoln Campus
Nebraska Dept. of Education

IV. CONCLUSIONS AND RECOMMENDATIONS

Usefulness Of Definition

When viewing the completed project, four areas are apparent which need comments. First, the ongoing usefulness of the definition for new and emerging occupations must be addressed.

The definition which was developed through compilation and refining of input should have a greater usefulness in Nebraska than the more general terms previously used. The definition is a functional one which has clear cut criterion statements which make the determination of new and emerging much more clear cut. Also, since this definition is not a "mandated" one but rather one which the users developed, ownership will be a factor in the usefulness of the definition.

Need For Curriculum Development

Once specific new and emerging occupations have been identified for Nebraska and schools have established a need for new programming, curriculum must be written or rewritten. This curriculum should be a product which has involved local and regional industry as well as educators to ensure quality and usefulness. Consideration should be given to funding the development of curriculum for programming in at least some of the new and emerging occupations.

Need For Planning Process

In order to best utilize all resources in planning for implementation of new and emerging occupations programs, it would be useful to identify a planning process which most efficiently uses all available community and government resources. This process can and should be developed so that it can be generalized to all areas of Nebraska and all post-secondary schools in Nebraska.

Only A Starting Point

It must be emphasized that although this project has identified some occupations labeled new and emerging, this is only a starting point for schools considering additional programming which is focused on future labor market needs. Any school contemplating new programming must initiate an extensive local needs assessment as part of a program planning feasibility planning process. Local educators are in the best position within their communities to accurately assess the need for specific training in their locale.

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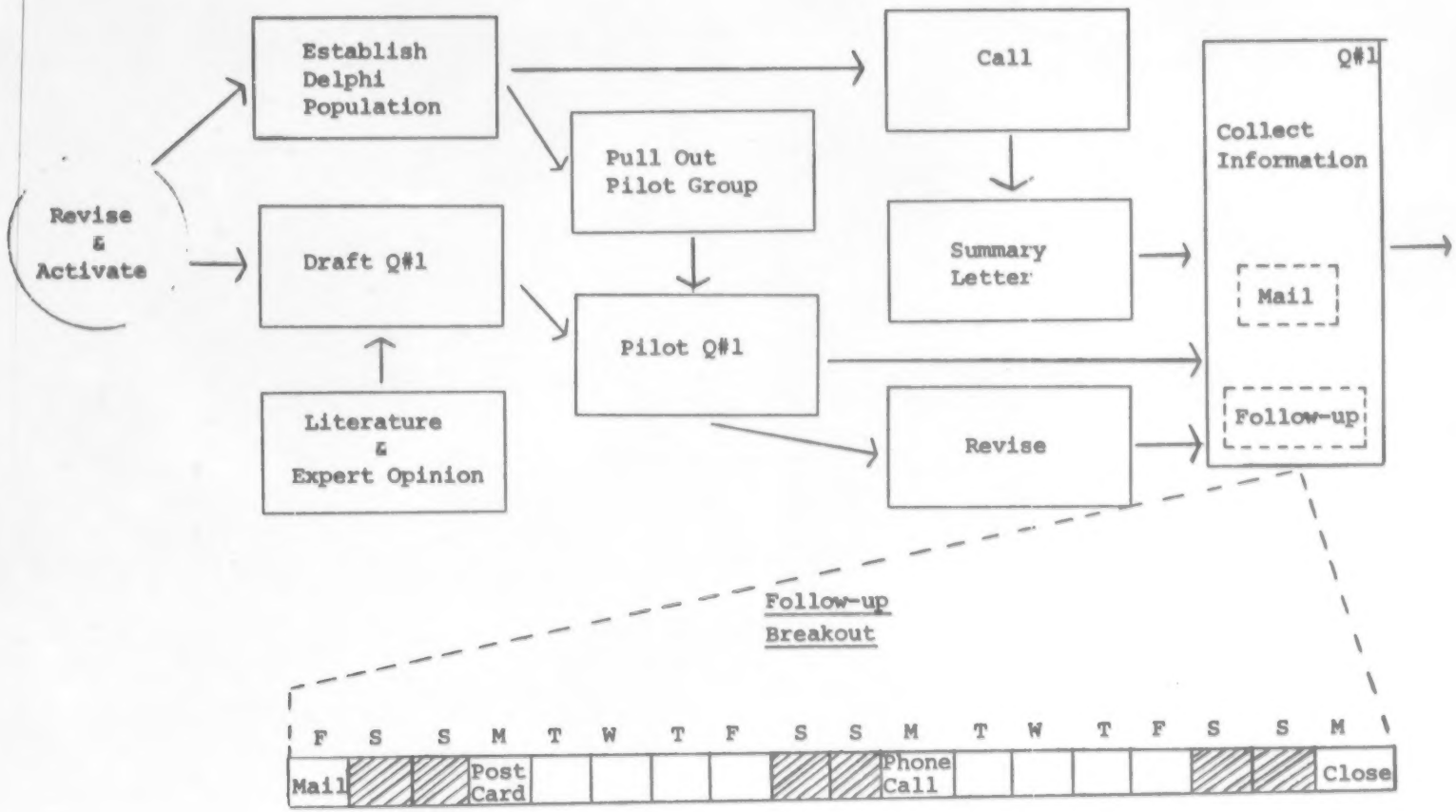
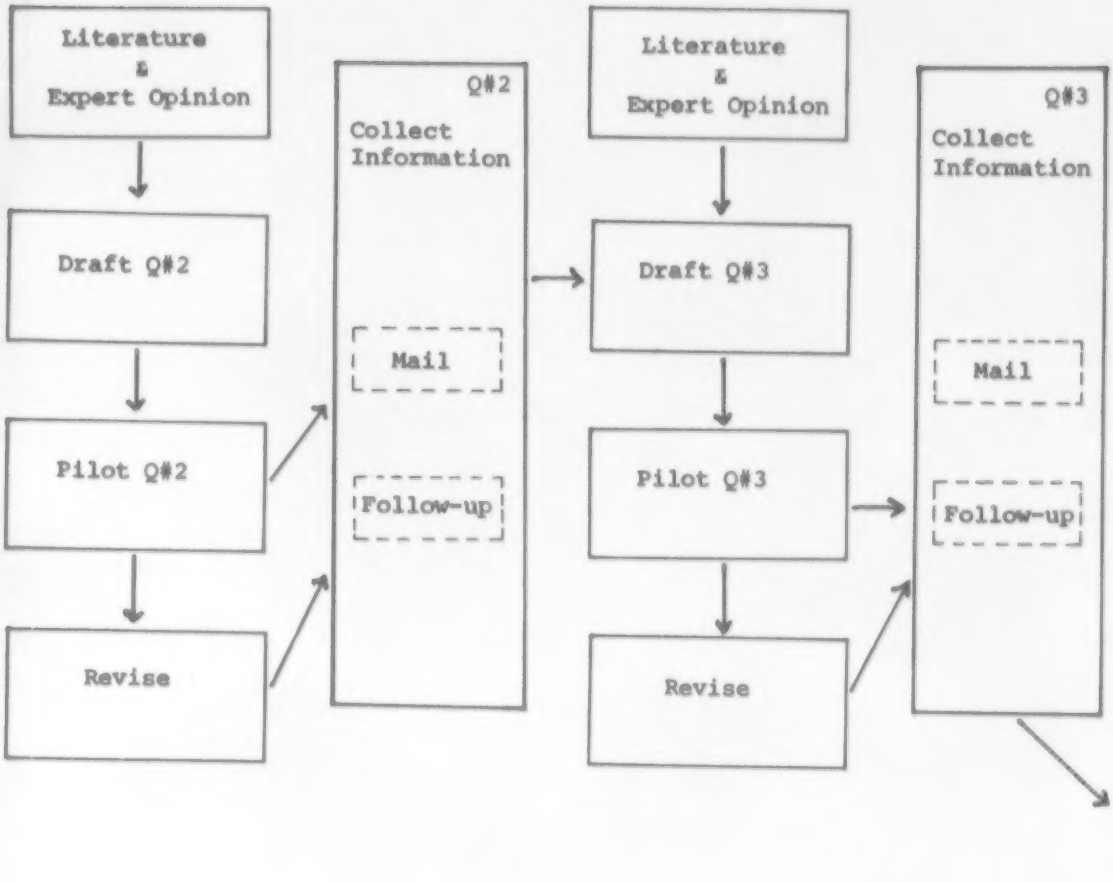
APPENDIX A

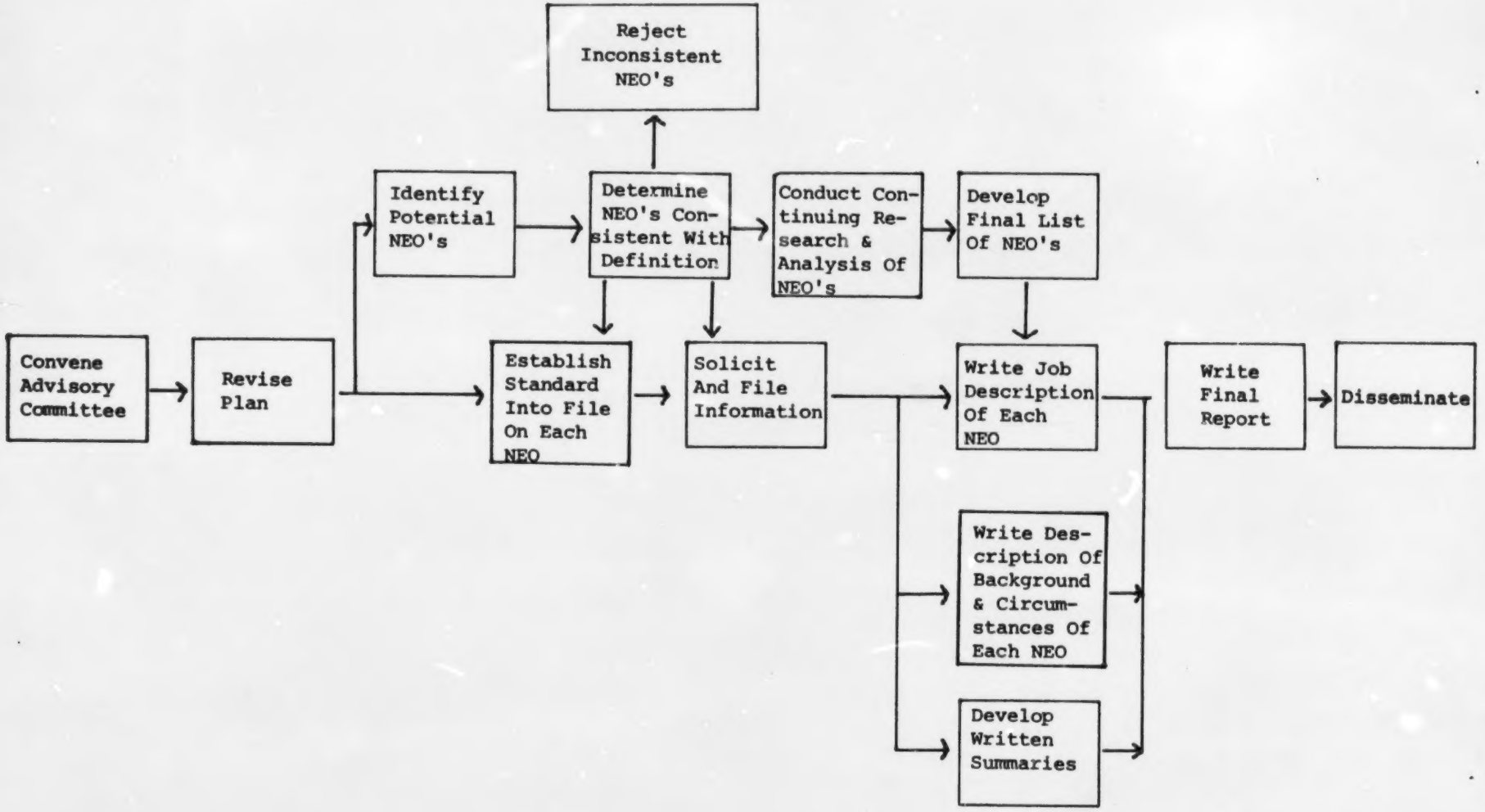
ACTIVITY FLOW CHARTS


Establish Delphi Population
Call
Q#1
Collect Information
Mail
Follow-up
Pull Out Pilot Group
Revise & Activate
Draft Q#1
Summary Letter
Pilot Q#1
Literature & Expert Opinion
Revise
Follow-up Breakout
F S S M T W T F S S M T W T F S S M
Mail
Post Card
Phone Call
Close

93

94


Literature
&
Expert Opinion
Draft Q#2
Pilot Q#2
Revise
Q#2
Collect
Information
Mail
Follow-up
Literature
&
Expert Opinion
Draft Q#3
Pilot Q#3
Revise
Q#3
Collect
Information
Mail
Follow-up
Write
Definition
NEO


Reject Inconsistent NEO's
Identify Potential NEO's
Determine NEO's Consistent With Definition
Conduct Continuing Research & Analysis Of NEO's
Develop Final List Of NEO's
Convene Advisory Committee
Revise Plan
Establish Standard Into File On Each NEO
Solicit And File Information
Write Job Description Of Each NEO
Write Final Report
Disseminate
Write Description Of Background & Circumstances Of Each NEO
Develop Written Summaries

APPENDIX B

PROJECT PARTICIPANTS

Richard Marvel
State Senator

Dr. Daniel Gerber, Campus Director
Southeast Community College-Fairbury

Gary Lund, President
NE Western Technical Community College

Dr. Neal Swanson
Wayne State College

Bill J. Siminoe, Superintendent
University of Nebraska at Curtis

Dr. Elmer Kunz, President
McCook Community College

Gerald Eigsti
Southeast Community College-Milford

Dennis Tyson, Dean of Instruction
Central Technical Community College

Joe Verbeek, Vocational Director
Gretna Public Schools

James E. Doyle, Dean of Vocational Instruction
Mid-Plains Community College

Dr. William G. Hasemeyer, Area President
Mid-Plains Community College

Ken Aten, President
Mid-Plains Community College

C. Cliff Hermance, Director of Placement
Mid-Plains Community College

Dr. Jerry Lee, Campus Director
Platte Technical Community College

Dr. Ronald Hutkin, Assoc. Dean, Voc Education
Platte Technical Community College

Dr. John Harms, Area President
Nebraska Western Community College

Dale Ernst, Director of Placement
Nebraska Western Community College

Frank Thoendel, Vocational Director
Nebraska Western Community College

Dr. Robert Cox, Area President
Nebraska Technical Community College

Jerry Holmberg, Placement Coordinator
Nebraska Technical Community College

Lyle Colsden, Director of Vocational Center
Kearney State College

Dr. Ron Tuttle, Assoc. Professor of Industrial Education, Kearney State College

Bev Harter, Vocational Director
Plattsmouth Public Schools

Dr. Esther Divney
Peru State College

Dr. Chester Gausman, Area President
Central Technical Community College

Larry Keller, Campus President
Grand Island Educational Center

Dr. Roy Phillips, Ft. Omaha Campus Director
Metro Technical Community College

Dr. Gary Reddig, South Omaha Campus Director
Metropolitan Technical Community College

Dr. Burrel Beck, Southwest Campus Director
Metropolitan Technical Community College

Dr. Jerry Baird, Acting Area President
Metropolitan Technical Community College

William Davis
Omaha OIC

Bill Beck, Vocational Education
University of Nebraska-Omaha

Pat Callone, Asst. Dean of Lifelong Learning
Creighton University

Marvin Kramer
Far-Mar-Co

Corrine McGowan
Bureau of Apprenticeship Training

Ann Campbell, Commissioner
Nebraska Department of Education

Dr. West Meirhenry, Chairman Adult & Continuing Education, University of Nebraska-Lincoln

Dr. Elton Mendenhall, Director Research Coordinating Unit, University of Nebraska-Lincoln

Dr. Robert Klabenes, Campus Director
Southeast Community College-Milford

Roger Rife, Placement Officer
Southeast Community College-Lincoln

Buford Jones
Lincoln Public Schools

Dr. David Buettner, Campus Director
Southeast Community College-Lincoln

Marge Harouff, Program Administrator
Nebraska Department of Education

Dale White, Director
Lincoln CETA

David Landis
State Senator

Robert Youngberg, Director
State Solar Office

Hazel Crain, Director
UNL Center for Business & Voc Tech Education

John Hanlon, Commissioner
Nebraska Department of Labor

Dixie Gibbons
BOS CETA

Marge Hatheway, Director EVO
Nebraska Department of Education

Don Wesley
State Senator

Dr. Robert Eicher, Area President
Southeast Community College-Lincoln

Ann Masters
Nebraska Department of Education

Dr. Paige Birdsall, Director
SOICC

Merle Rudebusch
Nebraska Department of Education

Lloyd Mather
Nebraska Department of Education

Steve Equall
Nebraska Department of Education

Ray Oepping
Square D Co.

Charles Gibson
McDonald Volkswagen

Mr. Jack Stiles, Administrator
St. Elizabeth's Hospital

Capt. Paul Jacobsen
Lincoln Police Department

Glenn Strain, Asst. Commissioner for Voc Ed
Nebraska Department of Education

Carl Blank
Nebraska Department of Education

Dr. C. A. Cromer, Director
Nebraska Advisory Council to Voc Ed

Tom Hackney
Burlington Northern

Phil Johnson, Personnel Recruiter
Farmland Industries

APPENDIX C

SAMPLE QUESTIONNAIRES

Name _____

Date _____

NEW AND EMERGING OCCUPATIONS
QUESTIONNAIRE #1

To develop a working definition of new and emerging occupations we need to develop a list of criteria. Criteria are limiting factors or traits which help define a concept. Criteria to define "new and emerging occupations" are not descriptions of any one occupation; likewise they are not lists of possible new and emerging occupations.

An example of criteria, might be the following list used to define "curriculum" which is "practical and useable."

- teaches skills which are necessary for employability
- teaches skills which will be used often
- provides a foundation for future learning
- skills taught are up-to-date and marketable

Please list any criteria which might be used to define "new and emerging occupations." Such issues as number of years an occupation has existed, number of employed individuals, availability of training, etc. might be addressed. Use these issues as starters and feel free to list any criteria you think might be appropriate.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

Thank you for your thoughtful consideration.

Name _____

New and Emerging Occupations
Questionnaire #2

IMPORTANT

It is possible to use many different criteria when determining whether an occupation ought to be regarded as New and Emerging in the Nebraska region. It is important to reduce all the possible criteria to those which are useful to our purpose of stimulating vocational education planning. To use inappropriate criteria would possibly exclude occupations which vocational education institutions in Nebraska should be considering for programming. Please assist us in identifying appropriate criteria by completing this questionnaire.

Directions:

1. Read all statements before you start.

2. Read each statement carefully.

3. Decide whether each statement
   - must not be considered
   - should not be considered
   - should be considered
   - must be considered

   when determining whether an occupation should be classified as new and emerging. Indicate by marking in the appropriate column.

4. Return the questionnaire in the enclosed envelope no later than January 30.

	Must not be considered	Should not be considered	Should be considered	Must be considered
1. In order for an occupation to be classified as new and emerging, the occupation must have come into existence in the last 15 years.				
2. In order for an occupation to be classified as new and emerging, the occupation must be ethical, consisting of tasks that are legal and moral.				
3. In order for an occupation to be classified as new and emerging, the occupation must be skilled, requiring definable skills and knowledge, and requiring some training prior to competent performance.				
4. In order for an occupation to be classified as new and emerging, training programs serving the occupation are nonexistent or severly limited in their ability to meet market demand and projections.				

	Must not be considered	Should not be considered	Should be considered	Must be considered
5. In order for an occupation to be classified as new and emerging, the occupation must be open to all, regardless of age, race, sex or religion.				
6. In order for an occupation to be classified as new and emerging, the occupation must require skills and knowledge which are also applicable to other occupations.				
7. In order for an occupation to be classified as new and emerging, skills and knowledge required to perform that occupation must be new or consist of new combinations of existing skills and knowledge.				
8. In order for an occupation to be classified as new and emerging, the occupation must provide sound economic return to those employed or be a part of a career ladder which has the potential to provide sound economic return through advancement.				
9. In order for an occupation to be classified as new and emerging, the occupation must include opportunities for employment of the physically handicapped.				
10. In order for an occupation to be classified as new and emerging, substantial regional growth and continuing regional demand must be forecast for that occupation.				
11. In order for an occupation to be classified as new and emerging, employment in the occupation must have achieved or is gaining recognition as an occupational area by: 1) licensing boards, 2) industry, 3) government agencies or 4) labor organizations.				

Comments or additional criteria:

Name _____

NEW & EMERGING OCCUPATIONS
QUESTIONNAIRE #3

IMPORTANT: The groupings of criteria which follow were formed by collating responses from Questionniare #2 in the New & Emerging Occupations study. This final instrument was designed to allow you an opportunity to respond one more time before the final definition of New and Emerging Occupations is written. Please indicate your reaction to each grouping of criterion statements below.

Special Note:

The following criterion scored highest but was also criticized as inappropriate for our purpose. It is removed from further consideration. Program planners will undoubtedly limit considerations and research to those occupations which are legal and moral.

> In order for an occupation to be classified as new and emerging, the occupation must be ethical, consisting of tasks that are legal and moral.

Reaction: _____

_____

Group I

The following criteria scored consistently high and are proposed as the basis for a definition of new and emerging occupations which will prove useful to vocational education planners as they prepare Local Vocational Education Plans. They will also be used later in this study to identify new and emerging occupations in Nebraska.

A. In order for an occupation to be classified as new and emerging, the occupation must be skilled, requiring definable skills and knowledge, and requiring some training prior to competent performance.

B. In order for an occupation to be classified as new and emerging, skills and knowledge required to perform that occupation must be new or consist of new combinations of existing skills and knowledge.

C. In order for an occupation to be classified as new and emerging, the occupation must provide sound economic return to those employed or be a part of a career ladder which has the potential to provide sound economic return through advancement.

Reactions: _____

_____

_____

_____

Group II

The following criteria scored lower and are proposed not to be included. While they may still prove useful for program planners, they will not be used to identify new and emerging occupations.

D. In order for an occupation to be classified as new and emerging, training programs serving the occupation are nonexistent or severely limited in their ability to meet market demand and projections.

E. In order for an occupation to be classified as new and emerging, substantial regional growth and continuing regional demand must be forecast for that occupation.

F. In order for an occupation to be classified as new and emerging, employment in the occupation must have achieved or is gaining recognition as an occupational area by: 1) licensing boards, 2) industry, 3) government agencies or 4) labor organizations.

Reaction: _____

_____

_____

_____

Group III

The following criteria scored very low and are not to be considered further unless compelling arguments are submitted justifying such consideration.

G. In order for an occupation to be classified as new and emerging, the occupation must be open to all, regardless of age, race, sex or religion.

H. In order for an occupation to be classified as new and emerging, the occupation must have come into existence in the last 15 years.

I. In order for an occupation to be classified as new and emerging, the occupation must include opportunities for employment of the physically handicapped.

J. In order for an occupation to be classified as new and emerging, the occupation must require skills and knowledge which are also applicable to other occupations.

Reactions: _____

_____

_____

_____

Please return this questionnaire by February 22.

APPENDIX D

OCCUPATIONAL DATA COLLECTION FORMS

NEO INFORMATION SHEET

OCCUPATION-DESCRIPTORS _____

Section A

Major Duties & Responsibilities (Begin with verbs--Type, sell, assist, prepare, etc.)	Percent of Time
1.	
2.	
3.	
4.	
5.	
	Total (100%)

Section B

Known employers in Nebraska (address, contact & phone)	Wage	Written job description available	License required (stipulate)	Machines or equip. used unique skills	Minimum education required	Available training-who conducts	# employed as of 1-80	est. # employed as of 1-90

Section C

Possible contacts for more information

Name	Firm	Address	Phone	Disposition
1.				
2.				
3.				
4.				
5.				

Section D

Factors influencing development, growth and change of occupation - comments - notes

Date:

APPENDIX E

ADVISORY GROUP

Larry Bare, Deputy Director
Department of Economic Development

Al Blezak, Department Ag Education
University of Nebraska-Lincoln

Hazel Crain, Director
UNL Center for Business & Voc Tech Education

Robert Eicher, Area President
Southeast Community College-Lincoln

Marge Harouff
Program Administrator for Vocational Education

Robert Klabenes
Southeast Community College-Milford

Richard Maybee
Teachers College University of Nebraska-Lincoln

Elton Mendenhall, Director Research Coordinating
Unit, University of Nebraska-Lincoln

Jim Leestma, Program Planner
Madonna Care Center

Tom Sork, Adult & Continuing Education
University of Nebraska-Lincoln

Carl Spencer
Program Services Associates, Inc.

Dale White, Director
Lincoln CETA